

REVIEW OF THE STATE WATER PLANNING PROCESS

Project # 20120701

Texas Water 
Development Board



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PROJECT SUMMARY

Overview

Texas is on the national forefront of water planning. The Texas Water Development Board's (TWDB) state-wide, bottom-up water planning process provides reasonable assurance that compliance with state law, TWDB rules and relevant contract requirements is achieved, and that TWDB assets are safeguarded. The planning process has good controls to ensure both water demand and supply estimates are reasonable while ensuring that interregional conflicts regarding over-allocated water supplies are resolved. The review found opportunities for improvement in some areas, including project prioritization, database management, quality control reviews, guidance to Regional Water Planning Groups (RWPG), communication and collaboration and the publication of the state water plan.

The 2012 State Water Plan recommends 562 unique water supply projects to provide additional 9 million acre feet of water by 2060, at an estimated capital cost of \$53 billion. Providing a ranking of these projects based on their impact (e.g. in terms of, say, the number of people affected or amount of water supplied) would greatly enhance the information. With as many as 562 projects, such a ranking would provide staff the ability to respond to lawmakers and others who request this information in their efforts to prioritize projects. The audit recognizes this is currently not required by the statute but believes this would enhance the information in the State Water Plan and greatly assist the Agency's stakeholders.

The state water planning contract management process has good controls that ensure payments are adequately supported. Contract payment controls are segregated between Water Resources Planning and Information (WRPI), Contract Administration, and Accounting. The Agency spends approximately \$15 million on each regional planning cycle.

The state water plan has improved in sophistication, visual appeal, graphics, and information quality from one cycle to the next. The plan was distributed to the Governor, Lieutenant Governor, Speaker of the House and Legislature on January 5, 2012. In addition, because the timeline for developing the State Water Plan did not coincide with the legislative session, TWDB management provided the Governor, Lieutenant Governor, Speaker of the House and Senate and House Natural Resources Committees with a summary of the regional water plans in January 2011. This is commendable as timely communication of water planning information is critical to this key stakeholder group.

The state water planning process involves a number of TWDB offices, including WRPI, Water Science & Conservation (WSC), Finance, Contract Administration, and Communications. Management has been responsive to the audit and has initiated actions that should address some of the issues discussed in this report.

Summary of Management's Response

Management appreciates the acknowledgment that the planning process provides reasonable assurance for compliance with requirements and the suggestions for improvement. Efforts are underway to implement most of the recommendations in this report. Detailed responses are described in each of the following sections.

Scope

The audit focused on the state water planning process from when the regional plans are received from the regional planning groups to when the state water plan is published. The audit focused primarily on the development of the 2012 State Water Plan (i.e. activities from September 1, 2010 to January 31, 2012). Fieldwork was conducted from April through May, 2012.

OBSERVATIONS, RECOMMENDATIONS, AND RESPONSES

1. Project Prioritization

Observation

The 2012 State Water Plan recommends 562 unique water supply projects to provide additional 9 million acre feet of water by 2060, at an estimated capital cost of \$53 billion. Revising the manner in which the planning data is presented to better facilitate the ranking of these projects based on their impact (e.g. in terms of, say, the number of people affected or amount of water supplied) would greatly enhance the information. With as many as 562 projects, such a ranking would provide staff the ability to respond to lawmakers and others who request this information in their efforts to prioritize projects. The audit recognizes this is currently not required by the statute but believes this would enhance the information in the State Water Plan and greatly assist the Agency's stakeholders. Staff may need to work with state leadership to determine which prioritization methodologies are most useful.

Recommendation

Consider devising ways to rank projects on their impact.

Management Response

Management is aware of the issues relating to the desire for a prioritization of water plan projects and staff is able to rank or prioritize projects in the state water plan based on numerous factors. There is an inherent prioritization in the existing state and regional water plans based on date of implementation in the plans. In addition, applications for state water plan funding are prioritized based on statutory requirements related to level of conservation and timing of implementation. However, management would point out the importance of entities implementing all water supply needs in the plan for water during a drought of record. Prioritization of all projects could result in significant problems or objections of some project sponsors if they do not agree with the prioritization and would be fruitless, unless the project sponsor is ready to implement a recommended water management strategy. Of course, TWDB can only fund those projects for which application for funding is made and assuming sufficient funding is available. Staff will continue discussions with state leadership on this issue. Responsible parties: Executive Administrator and Deputy Executive Administrator for Water Resources Planning and Information. **Target Implementation Date: June 2013.**

2. Database Management

The water planning database has become so integral to the state water planning process that it is considered mission critical to the agency. The planning database has improved from one planning cycle to the next which has allowed staff to perform more sophisticated data analysis with each cycle. For example, improvements in the database have enhanced staff's ability to summarize such information as water volumes and costs associated with different water management strategies by region.

2.1 Water Planning Database Functionality

Observation

The review found opportunities for improvement in the water planning database's functionality, as follows:

- i.) The current database (DB12) shows water user entities that also serve as wholesale water providers as two different entities. This creates both duplication and data redundancy.
- ii.) The database is not built to show dependencies between water management strategies. For example, a strategy to build a reservoir, treat the water and convey the water to where it is needed is currently reported as at least three unrelated separate projects. The implementation of the conveyance and treatment projects is dependent on the implementation of the reservoir

construction. Showing dependency relationships would make the information more meaningful.

- iii.) The database allows regional water planning groups too much flexibility in how they enter their data. This creates inconsistencies, which, in turn, create data analysis challenges. The audit appreciates the challenge of obtaining consistency in a bottom-up process.

Management is aware of these issues and plans to address them with the design and development of the new database, DB17.

Recommendations

Consider improving database functionality by incorporating the following suggestions in the DB17 project specification and design as indicated below.

- i.) Where applicable, show the relationships between water users and providers;
- ii.) Show dependencies between water management strategies; and,
- iii.) Improve the structure of the database to improve data entry consistency.

Management Response

Management agrees with the recommendations and has incorporated these improvements into the scope of work for development of the planning database, DB17. Responsible Parties: Director of Water Resources Planning and Director of Information Technology. **Target Implementation Date: March 2014.**

2.2 Infrastructure Survey Database Security

Observation

The security of the infrastructure survey data could be improved by implementing a user log-in. Currently, any individual with the URL to the application and entity identifier can edit/alter the data. This elevates the risk of unauthorized access. A user log-in is a preventive control that assists with assigning user rights and permissions on a need-to-know basis. It also assists with ensuring only authorized users have access to the data.

Recommendation

Consider implementing a user log-in feature within the infrastructure survey database for improved access control and data security.

Management Response

Management does not consider this a high risk for data integrity, but will consider incorporating a user log-in feature into the infrastructure survey interface if IT resources allow. This survey will not be conducted again until late 2016. Responsible Parties: Director of Water Resources Planning, Manager for Regional Water Planning and Director of Information Technology.
Target Implementation Date: March 2015

3. Quality Control Reviews

The quality control review process provides reasonable assurance that the regional water plans and resultant state water plan comply with state and TWDB requirements. The process includes controls aimed at ensuring interregional conflicts are resolved, water supply sources are not over-allocated and water planning decisions adequately consider water conservation as a means to meet water needs. In addition, the quality control review process has improved in operational efficiency from one cycle to another.

The review process is comprised of more than 200 review steps for line staff with several other (peer and supervisory) levels of review, all of which take approximately 120 days from when the plans are distributed for review to when the follow-up questions and comments are sent to RWPGs, and another 45 days for resolving regional planning issues.

WRPI management should be commended for implementing an extensive checklist to provide review staff with guidance and a clear set of management expectations of the work required. With more than 200 requirements for the regional plans and more than several staff involved, the checklist provides a good framework to ensure regulatory compliance and consistency. The audit found opportunities for improvement in the areas of checklist completion, communication, data discrepancies, and debriefing, as discussed below.

3.1 Checklist Completion

Observation

The audit found some inconsistencies in the manner in which the checklist was utilized. The quality control review process does not ensure the checklists are completely filled in, and thus there is a risk some of the reviews may not have been complete. The audit found some checklists that had outstanding items. Some of the inconsistencies in checklist completion

could be due to inadequate training. Staff has not been provided with formal training on the regional water planning quality control reviews. Periodic employee training is particularly important since the procedures have evolved from one cycle to the next.

Quality control procedures could be further improved by requiring review staff to sign off and date the checklist for each review step performed. Without these, the audit could not determine the identity of the reviewer or the date of the review. In addition, the process would provide more accountability if the checklist was completed and signed off electronically, with each action being dated and time-stamped.

Recommendations

Consider:

- i.) Requiring supervisory reviews to ensure that all relevant checklist items have been completely filled in before sign-off;
- ii.) Providing review staff with formal training on the quality control reviews; and,
- iii.) Implementing online tracking of the quality control checklist, including a signature and date for each action.

Management Response

Management appreciates these recommendations for the tool developed to assist reviewers in reviewing initially prepared regional water plans. Staff will consider using the tool as a more formal verification of review when establishing procedures for review of the 2016 initially prepared regional water plans due for review in 2015. In addition, staff will develop more formal training for reviewers in early 2015. Responsible Parties: Director of Water Resources Planning and Manager for Regional Water Planning. **Target Implementation Date: March 2015.**

3.2 Communication

Observation

The current quality control process involves professionals from several different disciplines (i.e. WRPI, Water Science & Conservation (WSC), Finance, and Communications) concurrently considering different aspects of the regional plans and the state water plan. Having these areas work effectively together requires teamwork, strong, ongoing two-way communication of issues, multi-divisional coordination, and good project management (including a timeline).

The audit found opportunities to enhance the inter-divisional communication and interaction, for improved teamwork. This is true for both the quality control review of the regional plans and the development and quality control of the state water plan. Communication was mostly limited to technical reviewers submitting comments/ questions to the project managers (in WRPI), usually via email. In addition, some reviewers did not get feedback on how their review comments had been addressed and thus, did not get a chance to ensure the issue was resolved to their satisfaction. While WRPI's planning procedures require interdisciplinary meetings to discuss the comment letters before they are sent out, the meetings did not take place.

WSC technical reviews aim to ensure estimates of water availability are reasonable based on the relevant water availability model data, and that each plan adequately considers water conservation, drought contingency planning, and water loss audit information. These reviews are critical to determining the regional plans' unmet water needs.

Recommendation

Consider improving operational efficiency of the review process by implementing a multi-divisional communication plan. The plan could include periodic roundtable meetings to discuss issues.

Management Response

Staff will reinstitute regular internal meetings on regional and state water planning no later than September 2012. Responsible Parties: Director of Water Resources Planning and Manager of Regional Water Planning. **Target Implementation Date: September 2012.**

3.3 Data Discrepancies

Observation

For the 2011 regional planning cycle, the quality control review of the 16 regional plans generated approximately 450 issues that needed to be satisfactorily addressed in order to meet statutory, agency, and contract requirements. These were comprised mostly of discrepancies between the regional plans and the water planning database.

The audit also found minor discrepancies between the state water plan and the database. Discrepancies with the database occur because the RWPGs have not been required to use the database to build their plans. Requiring the consultants to utilize the database in building the plans could streamline the process of ensuring the plans are consistent with the database, potentially saving a significant amount of work in finding and resolving discrepancies.

Management indicated it has revised its regional water planning contracts to require RWPGs to include certain minimum database information directly in the regional water plans. The detailed logistics on how this will be accomplished (within the database) are still being worked out.

Recommendation

Consider requiring the planning groups to utilize the database in building the regional water plans and incorporating database output directly in each plan.

Management Response

Management considers the database as reflecting the content of the regional water plans that are locally and regionally developed and not that the database should drive the regional water plans. However, as indicated in the observations, database requirements have been in contracts and guidance since the development of the 2006 regional water plans and new provisions have been incorporated into the 2011 planning contracts. Responsible Party: Director, Water Resources Planning.

3.4 Regional Planning Debriefing

Observation

Unlike with the state water plan, WRPI does not hold a debriefing meeting after each regional planning cycle. As has been true with the state water plan, debriefing provides an opportunity to not only discuss the great accomplishment of completing the reviews and obtaining Board approval of the plans within the timeline, but also to discuss and document lessons to carry forward to the next cycle.

Recommendation

Consider conducting a debriefing meeting after each regional planning cycle to note the great accomplishments and any lessons learned.

Management Response

Management will conduct a debriefing during the internal coordination meetings at the end of the 2016 regional water planning process. **Target Implementation Date: February 2016.**

4. Guidance

WRPI provides considerable amounts of in-person guidance to the RWPGs. For example, the Water Supply & Strategy Analysis team spends a significant amount of time (usually on the phone) answering questions about how to update the planning database regarding some aspects of the planning process. This suggests that the written guidance could be improved. WRPI's guidance is primarily aimed at addressing any gaps in the rules. It would also be useful to utilize guidance to interpret and/or explain the rules (including providing practice guides on how a certain requirement could be implemented) to complement the guidance that is currently available.

Providing consultants with detailed guidance on using the database would free up staff for other work, increasing operational efficiencies. The more guidance the RWPGs receive from rules and guidelines, the better the understanding and consistency in rule interpretation.

Recommendations

Consider:

- i.) Enhancing the guidance provided in planning rules and guidelines, for improved operational efficiency and consistency; and,
- ii.) Developing detailed formal guidance with training sessions at the beginning of each cycle. Capturing some of the training on online videos and/or webinars could be an efficient way to meet this need.

Management Response

Staff plans to update, expand, and improve all user manuals, etc. and will continue to provide multiple training sessions to technical consultants as soon as DB17 is available for use by the consultants. Responsible parties: Manager, Regional Water Planning and Team Lead for Water Supply & Strategy Analysis. **Target Implementation Date: March 2014.**

5. The State Water Plan

The state water plan has improved in sophistication, visual appeal, graphics, and information quality from one cycle to the next. For example, with each cycle there has been more clarity on such areas as water sales between entities and water management strategies. The review found opportunities for operational efficiency improvements in the areas of public meetings, communication, project management, and the publication process, as discussed below.

5.1 Public Meetings

Observation

The Board approved the release of the draft 2012 State Water Plan for public review and comment at its September 22, 2011, meeting. The public comment period extended from September 26, after posting in the Texas Register, to October 25, 2011.

The 2011 drought increased public interest in the state water plan. Visits to the state water plan website increased from approximately 600 per month to 3,800 per month for the two months following the 2012 State Water Plan's release. However, WRPI's public meetings to obtain comments on the draft plan did not generate much turnout and feedback. WRPI staff held public meetings in San Antonio, Lubbock, Weslaco, San Angelo, Alpine, Conroe, and Terrell during October to solicit comments. These meetings averaged 15 attendees and 2 oral comments per meeting. Since these meetings are not required by Texas law, there may be merit in weighing the cost against the perceived benefit, especially for those areas whose turnout and oral comments were lower than average.

In addition, WRPI hosted a public hearing on October 17, 2011, in Austin, as required by the statute. A total of 22 people attended the hearing, with three individuals providing oral comments. The TWDB also received 56 written comments, which were presented to the Board for consideration.

Recommendation

Consider discontinuing the public meetings in the low turnout areas, and replacing them with an interactive web draft, a webinar and other formats of the state water plan.

Management Response

Management agrees with the observation and will consider the recommendations in addition to not holding any public meetings after consultation with the Board prior to the fall of 2016 during the 2017 State Water Plan public comment period. Responsible parties: Executive Administrator and Deputy Executive Administrator for Water Resources Planning and Information. **Target Implementation Date: August 2016.**

5.2 Project Management and Communication

Observation

With so many variables, participants, and stakeholders, the development of the state water plan is a huge responsibility and management should be commended for a great accomplishment. The complexity of the process requires strong communication, multi-divisional coordination and project management. The audit found opportunities for improvement in these areas as discussed below.

While the regional planning process has firm timelines tied to the contract with political subdivisions, there is no evidence that a project schedule was developed and followed from the beginning of the state water plan project. Management did not use project management software to keep track of task completion.

Planning management indicated it briefed senior management on project progress, including any changes in the project timeline. However, participant staff from divisions other than WRPI informed the audit that it was not informed of the state water plan project “schedule” until close to its deadlines. This seems to suggest that the communication was not adequate. The state water plan is a significant undertaking, and the schedule should be settled and communicated approximately two years out from the statutory deadline to allow all disciplines to plan adequately. Management indicated it had been planning on a simple update of the previous plan but had to quickly increase the scope of the project, in response to the 2011 drought. This change may have contributed to the issues with the schedule. For more effective communication, the schedule could be maintained on TWDB’s internal website for easy access. The process could be enhanced with better communication regarding progress and more regular meetings.

As with the quality control review of regional plans, the audit found opportunities to enhance interdivisional communication between WRPI and the other areas.

Recommendations

Consider improving project management and communication by:

- i.) Developing a project schedule, posting it on the TWDB’s internal website and sending electronic notifications of changes to the entire multi-divisional team;
- ii.) Implementing project management software to facilitate task assignment and timely completion; and,
- iii.) Implementing an internal communication plan as part of the project plan. The plan could include periodic roundtable meetings to discuss issues.

Management Response

Management will incorporate these recommendations into the state water planning process for the development of the 2017 State Water Plan. Responsible parties: Executive Administrator and Deputy Executive Administrator for Water Resources Planning and Information. **Target Implementation Date: September 2015.**

5.3 Publication

While the process ended with a professional quality publication, the review found opportunities for improvement with the graphic design and other aspects of the publication of the state water plan, as briefly described below.

5.3.1. Graphic Design

Observation

Due to the unexpected departure of WRPI's graphic designer, TWDB's publication team was asked to assist in readying the draft plan for publication late in the process. The team found that the graphic design work performed to that point had not followed industry standards on print publication. The draft plan had a number of technical publication issues, some inconsistencies, and required some graphics rework within a short timeframe. In addition, the compressed schedule did not allow time for a professional edit.

Opportunities for improvement exist within the publication portion of the process. The graphics (graphs, photos, and maps) were produced for a web quality publication and did not have sufficient print resolution. The charts and graphs were not created in a software program appropriate for printing, and the original colors could only be used on the web.

Recommendations

Consider:

- i.) Involving TWDB's publication team from the beginning of the project;
- ii.) To the extent possible, making all of the graphics and design decisions upfront and before graphics are constructed;
- iii.) While the report cannot be "final" until the Board's approval, efforts should be made to finalize as much as possible all text and data before editing; and,

- iv.) As far as possible, limiting the number of changes made once the report is in the design software, and leaving sufficient time at the end for publications review.

Management Response

Management agrees with proper planning for the publication of the plan, however recognizes that each plan is unique and that it is an evolving document until final Board approval because the draft document must be amended in response to Board input and public comment. In addition, management recommends that future publications schedules be based on the needs of the state water planning process and will consider multiple avenues for plan format and development. Responsible parties: Executive Administrator and Deputy Executive Administrator for Water Resources Planning and Information. **Target Implementation Date: January 2016.**

5.3.2 Publication – Other

Observation

The review also found opportunities for improvement in other areas of publication, including format, and the way water management strategies information is presented in the plan.

An interactive online plan could be more user-friendly than the current online version. For example, it could provide users the capability to obtain more detail on a topic with the use of drop-down menus. While, to some extent there will always be a demand for paper copies of the plan, as technology advances, management could utilize focus groups to assist in anticipating what other formats would be in demand.

Including the cost of water management strategies (by strategy) would boost the plan's water management strategies chapter, which currently focuses on water volumes.

Recommendations

Consider improving the next plan by:

- i.) Utilizing focus groups to anticipate the needs of stakeholders and making the plan available in other formats; and,
- ii.) Including the cost of water management strategies, by strategy in the water management strategies chapter.

Management Response

Management agrees with the recommendations and will consider them when planning for the development of the 2017 State Water Plan. Responsible Parties: DEA Water Resources Planning and Information and Director of Water Resources Planning. **Target Implementation Date: January 2016.**

BASIS OF REVIEW

Objective & Scope

The objective of this review was to determine the extent to which the TWDB's water resources planning processes follow a systematic, comprehensive state-wide approach designed to ensure data integrity, security, timeliness and compliance with state and TWDB requirements. In addition, the review sought to determine the extent to which the process ensures that TWDB assets are safeguarded.

The review focused on the process from when the regional plans are received from the regional planning groups to when the state water plan is published, and primarily on activities from September 1, 2010, to January 31, 2012.

Criteria

Our audit was based upon standards as set forth in the Texas Administrative Code, TWDB's rules and other sound administrative practices. The audit was performed in compliance with the Institute of Internal Auditors' "International Standards for Professional Practice of Internal Auditing."

Additionally, we conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The water planning process starts at the regional level with 16 regional water planning groups, one for each of the state's 16 designated planning areas. Each planning group consists of about 20 members that represent at least 11 interests, as required by the statute, including agriculture, industry, public, environment, municipalities, business, water districts, river authorities, water utilities, counties, and power generation.

Texas Water Development Board: Review of the State Water Planning Process

During each five-year planning cycle, planning groups evaluate population projections, water demand projections, and existing water supplies that would be available during times of drought. Planning groups identify water user groups that will not have enough water during times of drought, recommend strategies that could be implemented to address shortages, and estimate the costs of these strategies. While carrying out these tasks, planning groups assess risks and uncertainties in the planning process and evaluate potential impacts of water management strategies on the state's water, agricultural, and natural resources.

Once the planning groups adopt their regional water plans, they are sent to the TWDB for approval. The TWDB then compiles the state water plan, which serves as a guide to state water policy, with information from the regional water plans and policy recommendations to the Texas Legislature. Each step of the process is open to the public and provides opportunities for public input.

The process involves Texas' other agencies with responsibility for the management of water resources. Texas Parks and Wildlife Department, the Texas Commission on Environmental Quality, and the Texas Department of Agriculture all have non-voting representation on each planning group. In addition, they actively participate in the development of population projections and are given the opportunity to comment on the state water plan early in its development.

The 2012 State Water Plan is Texas' ninth state water plan and the third to be developed through the regional water planning process, initiated by the Texas Legislature in 1997.

AUDIT TEAM INFORMATION

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